CHAPTER III

RESEARCH METHODOLOGY

This chapter covers the explanation of the research methodology used in the present study, which includes research design, data source, data collection, and data analysis.

3.1 Research Design

This study applied a descriptive qualitative method as it aimed to identify and compare the realization of rhetorical moves in science undergraduate thesis and undergraduate student's thesis abstracts from Universitas Pendidikan Indonesia. Besides, a comparison was done to the realization of rhetorical moves and the linguistic features that were applied in unpublished scientific papers and published scientific papers. The comparison of linguistics features focused on tense, voice, verb, and modal auxiliary. The results of the analysis were presented in the form of tables followed by the explanation.

3.2 Data Collection

The data of this study were 150 abstracts accessed from different sources. 75 undergraduate thesis abstracts (15 from each) were taken from Universitas Pendidikan Indonesia repository website in the field of hard science (Biology, Physics, Computer Science, Chemistry, and Mathematics). Meanwhile, for undergraduate student's research article abstracts, 75 abstracts (15 from each) were taken from various open data source homepages written by active students of science from Universitas Pendidikan Indonesia. To validate the data, the author's name in each abstract was verified by examining FORLAP RISEKDITI site. The dataset was randomly selected based on the range of publications which was from 2017 to 2019. The total data were considered sufficient to represent the pattern of undergraduate thesis abstracts and undergraduate student's thesis abstracts in hard science.

Due to a large amount of the data set, this study also used Antmover as the instrument of this study to analyze moves and steps. 15 thesis abstracts from

Harvard University repository website and 15 research article abstracts (5 for each) from Nature Reviews Molecular Cell Biology, Reviews on Modern Physics, Journal of Statistical Software, Chemical Reviews, and Publications Mathematiques were purposely selected as the training data for the software. These sources were chosen because, as for Harvard University, it was ranked No. 1 in Best Global Universities Rankings and those journals were reputed Q1 journals indexed by Scimago. The range of publications was approved between 2017 and 2019 to achieve a similar reliable variety of rhetorical moves to the dataset.

Table 1 Description of data sources

Data	Subject	Publication year	Number of abstracts
Undergraduate thesis	Biology	2017-2019	15
	Physics		15
	Computer Science		15
	Chemistry		15
	Mathematics		15
Research Article	Biology		15
	Physics		15
	Computer Science		15
	Chemistry		15
	Mathematics		15

3.3 Data Analysis

This study used Hyland model (2000) as the guideline to investigate the rhetorical moves, structures, and variations in the linguistic realization of the abstracts. The moves used as the labels, along with steps, of this study were Move 1- Introduction provides the context of the paper and motives for the research or discussion, Move 2- Purpose determines the purpose and outlines the intention behind the paper, Move 3- Method describes the research design, procedure, approach, and data. For this move, specialist disciplinary experts were needed to

give their deeper knowledge regarding the text subject, the typical rhetorical structure, and language employed in good papers in their fields to verify the author's interpretations (Moreno & Swales, 2018). Move 4- Product provides the main findings and the arguments, and Move 5- Conclusion presents the interpretations or extension of the results beyond the scope of the paper or wider implication.

The first step to analyze the data was downloading all of the abstracts, then were copied into .txt files as the only eligible format (Lubis, 2020). Second, the data were set into txt format, the collected data were inputted into Antmover. The software automatically analyzed and labeled the move and step for each sentence from the text which had been divided by the software. Third, the examined data were classified into some moves based on the synthesized model. Fourth, the researcher would analyze the linguistic features yielded in each move. After analyzing the rhetorical moves, the examined data were inputted into Microsoft Excel to tabulate the manifestation of the moves, steps, and linguistics features. Then, the obtained data were translated into a figure or a table representing the manifestation of moves, steps, and linguistics features. The author described the term 'occurrence' as the total of a move or step appeared in an abstract, while 'salience' as the total of abstracts presenting a particular move or step. Lastly, from the results of the analysis, the researcher drew up the discussion and conclusion of the study. The following table represents some examples of data analysis results. Table 4 presents the sample data analysis.

Table 2 Sample data analysis

No	Content	Move	Step	Tense	Verb	Voice
1	One of problems which happen in society **is** the confusion to choose tourism places in a certain region.	1	2	PR	RV	A
2	In addition, the lack of information **will make** the tourist make a	1	2	PR	AV	A

	wrong decision to choose a place to be visited.					
3	This study **is conducted** to create a recommendation system of tourism places for users who has lack of information about the place which is being visited based on the selected criteria.	2		PR	AV	P
4	Knowledgebased recommendation **is** a method which is used to gain the information data of tourism places based on the user's need, then it is continued weighting by using Analytical Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) to get ranked decision on every alternative.	3	3	PR	RV	A
5	Knowledge Based System **is** a system which uses knowledge set and then it is coded to machine language to conclude and do a task.	3	3	PR	RV	A
6	AHP Method **is** a multi criteria method and it has a role to decide	3	3	PR	RV	A

	value from any criteria which will be used.					
7	Furthermore, in AHP method, it **is implemented** consistency test to test validity from the result.	3	3	PR	MV	P
8	TOPSIS method **is** a calculation which uses a principle that chosen alternative should has nearby distance from ideal positive solution and the furthest from ideal negative solution.	3	3	PR	RV	A
9	The result of this study **suggests** some tourism places which is in line with users' wants.	5	4	PR	MV	A
	This recommendation system **is** web-based.	5	4	PR	RV	A
10	So that it **can be accessed** everywhere and operated easily by the users.	5	4	PR	AV	P